OVL50A / OVL100A / OVL150A / OVL200A

Over-Voltage Limiter – Contactor-Diode

Product Manual

Issue 6



1. Introduction

1.1. Overview

This manual describes the Over-Voltage Limiter (OVL) Contactor-Diode products listed in the following table:

Micha Part Number	OVL Products Described by this Manual	Painted Steel Enclosure (height x width x depth)
101 610	OVL 24V 50A Contactor-Diode Common Positive Painted Steel	600 x 400 x 200 mm
101 616	OVL 24V 50A Contactor-Diode Common Negative Painted Steel	600 x 400 x 200 mm
101 658	OVL 48V 50A Contactor-Diode Common Positive Painted Steel	600 x 400 x 200 mm
101 659	OVL 48V 50A Contactor-Diode Common Negative Painted Steel	600 x 400 x 200 mm

The Over-Voltage Limiter (OVL) Contactor-Diode products are available in Kit-of-parts to allow a system builder to build their own controllers

101 788	OVL 24V 50A Contactor-Diode Kit of parts
101 940	OVL 48V 50A Contactor-Diode Kit of parts
102 042	OVL 24V 100A Contactor-Diode Kit of parts
102 043	OVL 48V 100A Contactor-Diode Kit of parts
102 045	OVL 24V 200A Contactor-Diode Kit of parts
102 046	OVL 48V 200A Contactor-Diode Kit of parts

1.2. Controller Description

The OVL Contactor-Diode Controllers are designed to limit the output voltage to a maximum value. They do this by using the forward voltage of diodes in series with the output to drop the voltage. Normally-Closed Contactors are used to short out the diodes to remove them from the circuit. The Controllers are designed to handle a maximum continuous current in an ambient temperature of up to 55°C.

1.3. Controller Operation

The control electronics are fully automatic and energise or de-energise the contactors which insert or remove diodes into the output circuit in order to achieve regulation. The Controllers can operate in one of two Regulation Modes:

Regulation Mode 1:

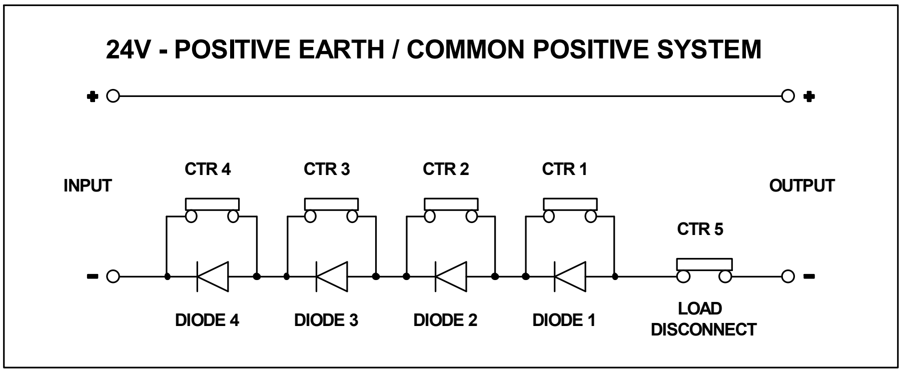
The Controller inserts diodes into the circuit or removes them from the circuit depending on the Output Voltage. The user can adjust the voltage at which diodes are inserted, and the voltage at which diodes are removed, from the circuit (see Section 3.6 for a detailed explanation).

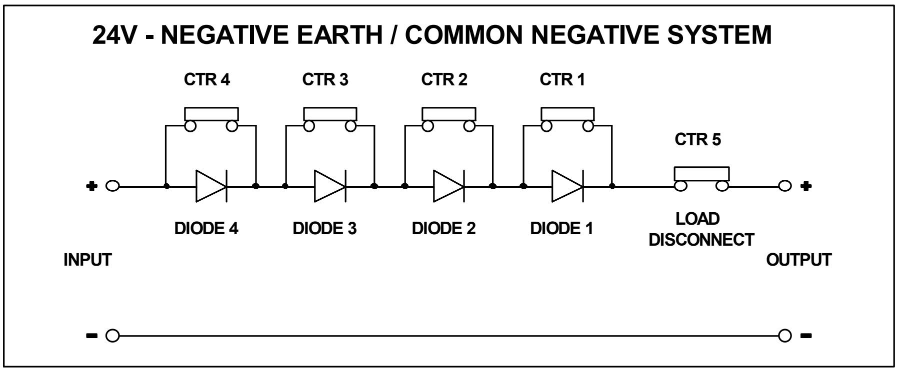
Regulation Mode 2:

The Controller inserts diodes into the circuit or removes them from the circuit depending on the Input Voltage. The user can adjust the set voltage and reset voltage for each contactor (see Scetion 3.7 for a detailed explanation).

1.4. 24V OVL Controller Configuration

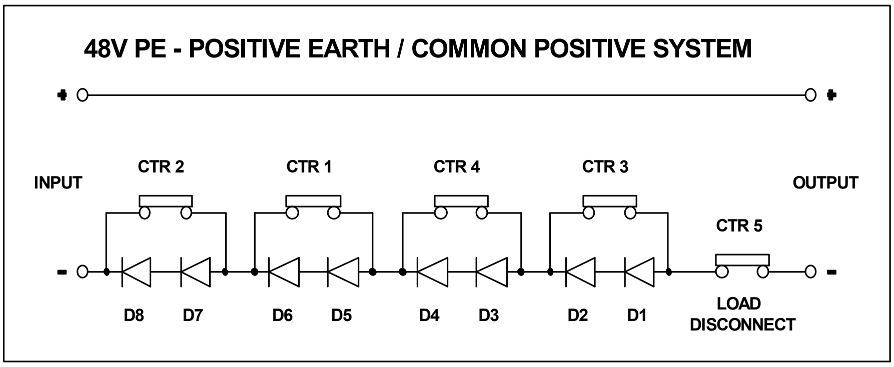
24V OVL Controllers use contactors connected across single diodes to limit the output voltage.

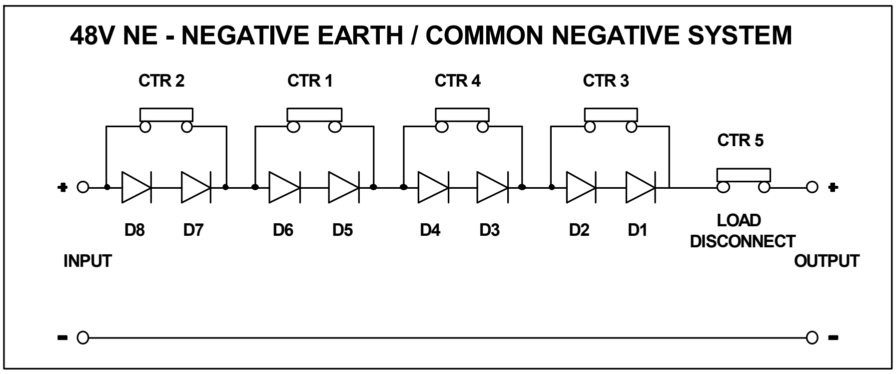




1.5. 48V OVL Controller Configuration

48V OVL Controllers use contactors connected accros double diodes to limit the output voltage.

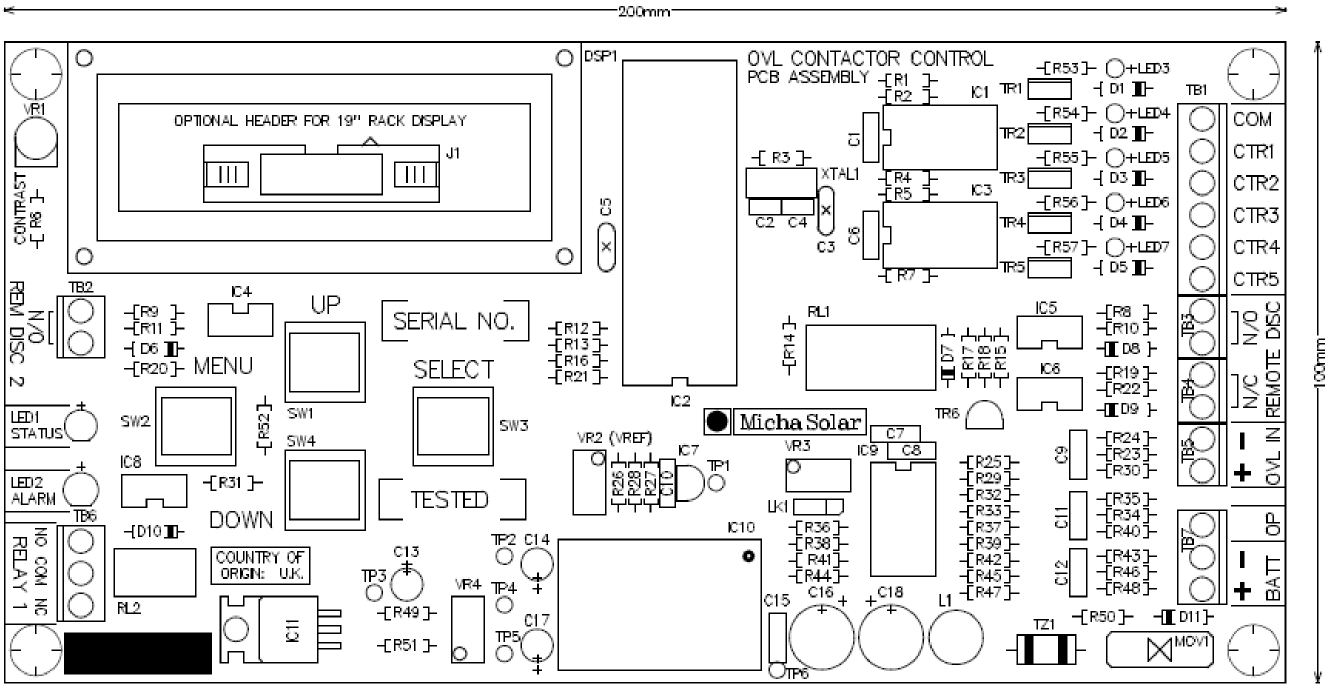




2. Controller Operation

2.1. OVL Contactor Control PCB Assembly

The PCB layout of the OVL Contactor Control PCB Assembly is shown below.



2.2. General Assembly & Wiring

See Sections 7, 8 and 9 for the Controller General Assembly and Wiring Schematics drawings.

2.3. Input and Output Connections

The Input connections should be connected to the Control PCB Terminals marked BATT + and BATT – .

The Output Live connection (positive for a Common Negative system, or negative for a Common Positive system) should be connected to the Control PCB Terminal marked OP (TB7).

2.4. Contactors

Contactors 1-4 are the contactors connected across the power diodes and should be connected between the Control PCB Terminals marked COM (contactor positives) and CTR1 to CTR4 (contactor negatives).

Contactor 5 is the Load Cut (Disconnect) contactor and should be connected between the Control PCB Terminals marked COM (contactor positive) and CTR5 (contactor negative). This contactor is activated for 5 seconds at first power up. It will also be energised if the Remote Disconnect is active.

2.5. Remote Disconnect

The Control PCB Assembly has terminals (marked REMOTE DISC: N/C and N/O) for a volt-free Remote Disconnect contact to be connected.

The controller is factory set for use with a Normally-Open (marked N/O) contact which closes to activate; this means that the Normally-Closed (marked N/C) contact input is shorted out with a wire link.

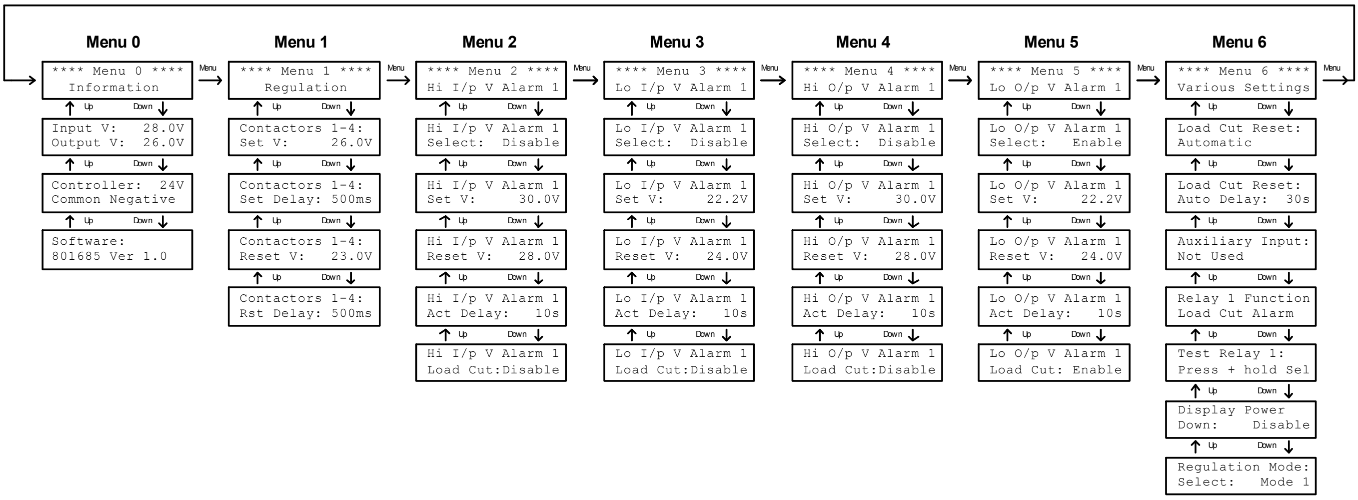
2.6. Auxiliary Input (Rem Disc 2)

The Control PCB Assembly has terminals (marked REM DISC 2 N/O) for a volt-free contact to be connected. When the volt-free contact is closed then the Auxiliary Input is activated (see Section 3.12 – Menu 6).

3. Controller Software Menus

The Over-Voltage Limiter (OVL) Contactor-Diode Controller uses a microprocessor to provide control and diagnostic features in the unit. A 2x16 alphanumeric LCD Display is used to show parameters and set-points as described below. The following diagram describes the various screens available to the user:

Software Menu Guide:



3.1. Menu Navigation

Navigating the menus is done by using the Menu, Up and Down switches while the Select switch will activate various functions. Pressing Menu and Down together will take the user back to Menu 0 Screen 0 (Home).

Pressing the Menu switch at any screen in Menu 0 will change the display to show the top screen of Menu 1. In a similar manner, the user can move to Menus 2, 3, 4 etc and back to Menu 0, by pressing the Menu switch repeatedly.

The Up and Down Switches will move the user up and down within a menu.

3.2. Parameter Adjustment

To adjust settings: at the appropriate screen, press Select and the parameter will flash. Use the Up or Down switches to select the desired value. Press Select again to accept and store the value in non-volatile memory.

3.3. Power Up Screen

LCD Display	Screen	Description
Contactor Over Voltage Limiter	Screen 0	The Power Up Screen is shown for 2 seconds after power up

3.4. Menu 0 – Information

LCD Display	Screen	Description
`**** Menu 0 ****` `Information`	Screen 0	Menu Identifier (automatically goes to Screen 1 after 2 seconds)
`Input V:   28.0V` `Output V:  26.0V`	Screen 1	Controller Information: Input Voltage and Output Voltage (Load Voltage)
`Controller:  24V` `Common Negative`	Screen 2	Controller Information: Unit Voltage and Unit Polarity
`Software:` `801685 Ver 1.0`	Screen 3	Controller Information: Microcontroller Software Number and Version

Menu 0 shows basic Controller Information: Input Voltage and Output Voltage, System Voltage and Polarity and the Microcontroller Software Number and Version.

3.5. Menu 0 Screen 1

LCD Display	Screen	Description
`Input V:   28.0V` `Output V:  26.0V`	Screen 1A	Input Voltage and Output Voltage (Load Voltage)
`Input V:   28.0V` `Hi I/p V Alarm 1`	Screen 1B	Input Voltage High Input Voltage Alarm 1 activated (flashes on line 2)
`Load Cut Active:` `Reset --> Select`	Screen 1C	Load Cut Activated Press Select to Reset (for Manual reset)
`Load Cut Active:` `Auto Reset:  30s`	Screen 1D	Load Cut Activated Auto Reset in 30 secs (for Automatic reset)

Screen 1 normally displays the Input Voltage and Output Voltage as shown in Screen 1A.

If an alarm is enabled and active then line 2 of the screen will flash as shown in Screen 1B.

If the Load Cut is active, the display will show Screen 1C if the Load Cut Reset is set to Manual, or Screen 1D if the Load Cut Reset is set to Automatic (see Menu 6: Load Cut Reset).

3.6. Menu 1 – Regulation Mode 1

The Controller operates in one of two Regulation Modes: Mode 1 and Mode 2 (see Menu 6 Screen 7).

LCD Display	Screen	Description
`**** Menu 1 ****` `Regulation`	Screen 0	Menu Identifier : Output Voltage Regulation Settings
`Contactors 1-4:` `Set V:     26.0V`	Screen 1	Contactors 1-4 Set Voltage: Output Voltage at which successive Contactors energise
`Contactors 1-4:` `Set Delay: 500ms`	Screen 2	Contactors 1-4 Set Delay: Delay between successive Contactors energising
`Contactors 1-4:` `Reset V:   23.0V`	Screen 3	Contactors 1-4 Reset Voltage: Output Voltage at which successive Contactors de-energise
`Contactors 1-4:` `Rst Delay: 500ms`	Screen 4	Contactors 1-4 Reset Delay: Delay between successive Contactors de-energising

Regulation: Contactors 1-4 Set Voltage

If the Output Voltage increases to be equal to or greater than the Contactors 1-4 Set Voltage, then the controller energises a contactor, which inserts the diode(s) connected across its contacts into the circuit. This has the effect of reducing the output voltage by a certain voltage (depending on the number of diodes connected across the contactor contacts).

If the Output Voltage continues to be equal to or greater than the Contactors 1-4 Set Voltage, then the controller waits for the Contactors 1-4 Set Delay time and then energises the next contactor and so on until all contactors are energised. Each contactor being energised inserts more diodes into the circuit and reduces the output voltage.

Regulation: Contactors 1-4 Reset Voltage

If the Output Voltage decreases to be equal to or less than the Contactors 1-4 Reset Voltage, then the controller de-energises a contactor, which removes the diode(s) connected across its contacts from the circuit. This has the effect of increasing the output voltage by a certain voltage (depending on the number of diodes connected across the contactor contacts).

If the Output Voltage continues to be equal to or less than the Contactors 1-4 Reset Voltage, then the controller waits for the Contactors 1-4 Reset Delay time and then de-energises the next contactor and so on until all contactors are de-energised. Each contactor being de-energised removes more diodes from the circuit and increases the output voltage.

3.7. Menu 1 – Regulation Mode 2

The Controller can be operate in one of two Regulation Modes: Mode 1 and Mode 2 (see Menu 6 Screen 7).

LCD Display	Screen	Description
`**** Menu 1 ****` `Regulation`	Screen 0	Menu Identifier : Input Voltage Regulation Settings
`Contactor 1:` `Set V: 26.0V`	Screen 1	Contactor 1 Set Voltage: Input Voltage at which Contactor 1 energises
`Contactor 1:` `Reset V: 25.0V`	Screen 2	Contactor 1 Reset Voltage: Input Voltage at which Contactor 1 de-energises
`Contactor 2:` `Set V: 27.4V`	Screen 3	Contactor 2 Set Voltage: Input Voltage at which Contactor 2 energises
`Contactor 2:` `Reset V: 26.0V`	Screen 4	Contactor 2 Reset Voltage: Input Voltage at which Contactor 2 de-energises
`Contactor 3:` `Set V: 29.0V`	Screen 5	Contactor 3 Set Voltage: Input Voltage at which Contactor 3 energises
`Contactor 3:` `Reset V: 27.6V`	Screen 6	Contactor 3 Reset Voltage: Input Voltage at which Contactor 3 de-energises
`Contactor 4:` `Set V: 30.0V`	Screen 7	Contactor 4 Set Voltage: Input Voltage at which Contactor 4 energises
`Contactor 4:` `Reset V: 28.6V`	Screen 8	Contactor 4 Reset Voltage: Input Voltage at which Contactor 4 de-energises
`Cont 5: Load Cut` `Set V: 22.2V`	Screen 9	Contactor 5: (Load Cut) Input Voltage at which Contactor 5 energises
`Cont 5: Load Cut` `Reset V: 26.0V`	Screen 10	Contactor 5: (Load Cut) Input Voltage at which Contactor 5 de-energises

Contactor Output Control

Each Normally-Closed Contactor is provided with Input Voltage Set and Reset Set-points.

Contactors 1 to 4: (to be used across power diodes)

If the Input Voltage is equal to or greater than the Contactor Set Voltage, then the Contactor is energised.

If the Input Voltage is equal to or less than the Contactor Reset Voltage, then the Contactor is de-energised.

Contactor 5: (to be used as a Load Cut contactor)

If the Input Voltage is equal to or less than the Contactor Set Voltage, then the Contactor is energised.

If the Input Voltage is equal to or greater than the Contactor Reset Voltage, then the Contactor is de-energised.

3.8. Menu 2 – High Input Voltage Alarm 1 Settings

LCD Display	Screen	Description
`**** Menu 2 ****` `Hi I/p V Alarm 1`	Screen 0	Menu Identifier : High Input Voltage Alarm 1 Settings
`Hi I/p V Alarm 1` `Select:  Disable`	Screen 1	Alarm Function : Select Disable or Enable alarm function
`Hi I/p V Alarm 1` `Set V:     30.0V`	Screen 2	Alarm Set Voltage : Voltage at which the alarm activates
`Hi I/p V Alarm 1` `Reset V:   28.0V`	Screen 3	Alarm Reset Voltage : Voltage at which the alarm de-activates
`Hi I/p V Alarm 1` `Act Delay:   10s`	Screen 4	Alarm Activation Delay : Time the alarm condition must be present to activate the alarm
`Hi I/p V Alarm 1` `Load Cut:Disable`	Screen 5	Load Cut Function : Select Disable or Enable Load Cut if the Alarm is active

High Input Voltage Alarm 1 Function

The controller is shipped from the factory with the Alarm function Disabled. To use this function, the user must Enable the alarm by using Screen 1.

If the input voltage is equal to or greater than the Alarm Set Voltage (Screen 2) for the Activation Delay time (Screen 4), then the alarm is activated.

If the input voltage is equal to or less than the Alarm Reset Voltage (Screen 3), then the alarm is de-activated.

The alarm may be used to disconnect the load (when the alarm is activated) using the Load Cut Disable/Enable function (Screen 5). The controller is shipped from the factory with this function Disabled. To use this function, the user must Enable it by using Screen 5.

Load Cut occurs if the Alarm is Enabled and Activated. If Regulation Mode 2 is selected, this feature requires Software 801685 Version 1.1 to operate correctly – see Section 5.1.

Load Cut is reset Automatically or Manually (see Menu 6: Load Cut Reset).

3.9. Menu 3 – Low Input Voltage Alarm 1 Settings

LCD Display	Screen	Description
`**** Menu 3 ****` `Lo I/p V Alarm 1`	Screen 0	Menu Identifier : Low Input Voltage Alarm 1 Settings
`Lo I/p V Alarm 1` `Select:  Disable`	Screen 1	Alarm Function : Select Disable or Enable alarm function
`Lo I/p V Alarm 1` `Set V:     22.2V`	Screen 2	Alarm Set Voltage : Voltage at which the alarm activates
`Lo I/p V Alarm 1` `Reset V:   24.0V`	Screen 3	Alarm Reset Voltage : Voltage at which the alarm de-activates
`Lo I/p V Alarm 1` `Act Delay:   10s`	Screen 4	Alarm Activation Delay : Time the alarm condition must be present to activate the alarm
`Lo I/p V Alarm 1` `Load Cut:Disable`	Screen 5	Load Cut Function : Select Disable or Enable Load Cut if the Alarm is active

Low Input Voltage Alarm 1 Function

The controller is shipped from the factory with the Alarm function Disabled. To use this function, the user must Enable the alarm by using Screen 1.

If the input voltage is equal to or less than the Alarm Set Voltage (Screen 2) for the Activation Delay time (Screen 4), then the alarm is activated.

If the input voltage is equal to or greater than the Alarm Reset Voltage (Screen 3), then the alarm is de-activated.

The alarm may be used to disconnect the load (when the alarm is activated) using the Load Cut Disable/Enable function (Screen 5). The controller is shipped from the factory with this function Disabled. To use this function, the user must Enable it by using Screen 5.

Load Cut occurs if the Alarm is Enabled and Activated. If Regulation Mode 2 is selected, this feature requires Software 801685 Version 1.1 to operate correctly – see Section 5.1.

Load Cut is reset Automatically or Manually (see Menu 6: Load Cut Reset).

3.10. Menu 4 – High Output Voltage Alarm 1 Settings

LCD Display	Screen	Description
`**** Menu 4 ****` `Hi O/p V Alarm 1`	Screen 0	Menu Identifier : High Output Voltage Alarm 1 Settings
`Hi O/p V Alarm 1` `Select:  Disable`	Screen 1	Alarm Function : Select Disable or Enable alarm function
`Hi O/p V Alarm 1` `Set V:     30.0V`	Screen 2	Alarm Set Voltage : Voltage at which the alarm activates
`Hi O/p V Alarm 1` `Reset V:   28.0V`	Screen 3	Alarm Reset Voltage : Voltage at which the alarm de-activates
`Hi O/p V Alarm 1` `Act Delay:   10s`	Screen 4	Alarm Activation Delay : Time the alarm condition must be present to activate the alarm
`Hi O/p V Alarm 1` `Load Cut:Disable`	Screen 5	Load Cut Function : Select Disable or Enable Load Cut if the Alarm is active

High Output Voltage Alarm 1 Function

The controller is shipped from the factory with the Alarm function Disabled. To use this function, the user must Enable the alarm by using Screen 1.

If the output voltage is equal to or greater than the Alarm Set Voltage (Screen 2) for the Activation Delay time (Screen 4), then the alarm is activated.

If the output voltage is equal to or less than the Alarm Reset Voltage (Screen 3), then the alarm is de-activated.

The alarm may be used to disconnect the load (when the alarm is activated) using the Load Cut Disable/Enable function (Screen 5). The controller is shipped from the factory with this function Disabled. To use this function, the user must Enable it by using Screen 5.

Load Cut occurs if the Alarm is Enabled and Activated. If Regulation Mode 2 is selected, this feature requires Software 801685 Version 1.1 to operate correctly – see Section 5.1.

Load Cut is reset Automatically or Manually (see Menu 6: Load Cut Reset).

3.11. Menu 5 – Low Output Voltage Alarm 1 Settings

LCD Display	Screen	Description
`**** Menu 5 ****` `Lo O/p V Alarm 1`	Screen 0	Menu Identifier : Low Output Voltage Alarm 1 Settings
`Lo O/p V Alarm 1` `Select:   Enable`	Screen 1	Alarm Function : Select Disable or Enable alarm function
`Lo O/p V Alarm 1` `Set V:     22.2V`	Screen 2	Alarm Set Voltage : Voltage at which the alarm activates
`Lo O/p V Alarm 1` `Reset V:   24.0V`	Screen 3	Alarm Reset Voltage : Voltage at which the alarm de-activates
`Lo O/p V Alarm 1` `Act Delay:   10s`	Screen 4	Alarm Activation Delay : Time the alarm condition must be present to activate the alarm
`Lo O/p V Alarm 1` `Load Cut: Enable`	Screen 5	Load Cut Function : Select Disable or Enable Load Cut if the Alarm is active

Low Output Voltage Alarm 1 Function

The controller is shipped from the factory with the Alarm function Enabled. The user can Disable the alarm by using Screen 1.

If the output voltage is equal to or less than the Alarm Set Voltage (Screen 2) for the Activation Delay time (Screen 4), then the alarm is activated.

If the output voltage is equal to or greater than the Alarm Reset Voltage (Screen 3), then the alarm is de-activated.

The alarm may be used to disconnect the load (when the alarm is activated) using the Load Cut Disable/Enable function (Screen 5). The controller is shipped from the factory with this function Enabled. The user can Disable the function by using Screen 5.

Load Cut occurs if the Alarm is Enabled and Activated. If Regulation Mode 2 is selected, this feature requires Software 801685 Version 1.1 to operate correctly – see Section 5.1.

Load Cut is reset Automatically or Manually (see Menu 6: Load Cut Reset).

3.12. Menu 6 – Various Settings

LCD Display	Screen	Description
`**** Menu 6 ****` `Various Settings`	Screen 0	Menu Identifier : Various Settings
`Load Cut Reset:` `Automatic`	Screen 1	Load Cut Reset : Automatic or Manual
`Load Cut Reset:` `Auto Delay:  30s`	Screen 2	Load Cut Reset : Automatic Reset Delay time: (5 to 120 seconds)
`Auxiliary Input:` `Not Used`	Screen 3	Auxiliary Input (Remote Disc 2 Input) : Set to either Load Disconnect or Load Cut Reset
`Relay 1 Function` `Load Cut Alarm`	Screen 4	Relay 1 Function : Select one of various functions
`Test Relay 1:` `Press + Hold Sel`	Screen 5	Test Relay 1 : Press Select to change the state of Relay 1
`Display Power` `Down:    Disable`	Screen 6	LCD Display Power Down : Disable = always on / Enable = power down after 4 minutes
`Regulation Mode:` `Select:   Mode 1`	Screen 7	Regulation Mode Select: Mode 1 or Mode 2 (See Menu 1 – Sections 3.6 and 3.7)

Load Cut Reset

Load Cut Reset may be Automatic or Manual (Screen 1). If Automatic is selected, then when the load is disconnected it will be reconnected after the Load Cut Reset Automatic Reset Delay time (Screen 2). If Manual is selected, then when the load is disconnected, the user must press the Select switch to reconnect the load. Alternatively, if the Auxiliary Input (Remote Disc 2) is set to Load Cut Reset (Screen 3) then the load may be reconnected by activating the Auxiliary Input (Remote Disc 2).

Auxiliary Input

A volt-free closed contact will activate the Auxiliary Input function. The Auxiliary Input can be set to Load Disconnect or to Load Cut Reset (Screen 3). If set to Load Disconnect, then when the Auxiliary input is active, the load will be cut.

Alarm Relay 1

Alarm Relay 1 can be programmed to indicate any one of the following functions (Screen 4): High Input Voltage Alarm 1 / Low Input Voltage Alarm 1 / High Output Voltage Alarm 1 / Low Output Voltage Alarm 1 / Load Cut / Common Alarm / System Normal (reverse function of Common Alarm). Alarm Relay 1 may be tested by using Screen 5.

LCD Display Power Down

To lengthen the life of the LCD Display it can be powered down 4 minutes after the last keypad switch press if the function is set to Enable (Screen 6).

Regulation Mode

Select Regulation Mode 1 or 2 (see Sections 3.6 and 3.7 for more details)

4. Configuration Screens



NOTE: The Configuration Screens should ONLY be used by authorised persons.

CAUTION: Setting the Configuration Screens incorrectly may cause incorrect operation.

WARNING: Setting the Configuration Screens incorrectly may result in damaging the unit.

4.1. Power Up Screen

LCD Display	Screen	Description
`Contactor Over` `Voltage Limiter`	Screen 0	The Power Up Screen is shown for 2 seconds after power up

To enter the Configuration Screens, the Menu and Select switches should be pressed and held down when the Power Up Screen (see above) is shown. When the first Configuration Screen is shown, the switches may be released.

4.2. Configuration Screens

Display	Screen	Description
`Configure Unit` `Voltage:     24V`	Screen 1	Configure Unit Voltage: 24V or 48V
`Configure Unit:` `Common Negative`	Screen 2	Configure Unit Polarity: Common Negative or Common Positive
`Configure Unit:` `Cont Coil V: 30V`	Screen 3	Configure Unit Contactor Coil Voltage 30V or 60V
`Configure Unit:` `Cont PS: Enable`	Screen 4	Configure Unit Contactor Power Saving: Enable or Disable

4.3. Configure Unit Voltage and Polarity

The software must be configured for the system voltage as shown on the Control PCB Assembly.

The software must be configured for the system polarity (Common Negative or Common Positive) depending on how the system has been connected.

4.4. Configure Unit Contactor Coil Voltage and Power Saving

The software can be used with 30V or 60V Contactors, and with or without Power Saving.

If Power Saving is Enabled, the ouput to a contactor is switched fully on for 0.25 second and thereafter energised at approximately 40% of the supply voltage. This is achieved by switching the output drive transistor at a 40:60 mark-space ratio at around 20KHz. Every sixty seconds, or whenever a new contactor is energised, the contactors(s) that should be energised are powered at 100% for 0.25 second.

Power Saving allows contactors to operate with reduced power consumption in the coil and so reduces heat and operating current.

Note: Not all contactors or relays are suitable for this type of drive. If it is required that a continuous voltage is required to switch the contactors or relays, then set the Power Saving to Disabled

Note: With Power Saving Disabled, the contactors which are energised will be connected directly and continuously across the battery supply.

4.5. Factory Defaults

Parameter Description	Factory Default Setting
System Voltage / Polarity	24VDC / Common Positive
System Contactor Coil Voltage / Power Saving	Contactor Coil Voltage = 30VDC / Power Saving Enabled
Regulation Mode	Regulation Mode 1
Regulation Mode 1: Contactors 1-4 Set Voltage	24V Unit = 26.0V / 48V Unit = 52.0V
Regulation Mode 1: Contactors 1-4 Set Delay	500ms
Regulation Mode 1: Contactors 1-4 Reset Voltage	24V Unit = 23.0V / 48V Unit = 46.0V
Regulation Mode 1: Contactors 1-4 Reset Delay	500ms
Regulation Mode 2: Contactor 1 Set Voltage	24V Unit = 26.0V / 48V Unit = 52.0V
Regulation Mode 2: Contactor 1 Reset Voltage	24V Unit = 25.0V / 48V Unit = 50.0V
Regulation Mode 2: Contactor 2 Set Voltage	24V Unit = 27.4V / 48V Unit = 54.8V
Regulation Mode 2: Contactor 2 Reset Voltage	24V Unit = 26.0V / 48V Unit = 52.0V
Regulation Mode 2: Contactor 3 Set Voltage	24V Unit = 29.0V / 48V Unit = 58.0V
Regulation Mode 2: Contactor 3 Reset Voltage	24V Unit = 27.6V / 48V Unit = 55.2V
Regulation Mode 2: Contactor 4 Set Voltage	24V Unit = 30.0V / 48V Unit = 60.0V
Regulation Mode 2: Contactor 4 Reset Voltage	24V Unit = 28.6V / 48V Unit = 57.2V
Regulation Mode 2: Cont 5 (Load Cut) Set Voltage	24V Unit = 22.2V / 48V Unit = 44.4V
Regulation Mode 2: Cont 5 (Load Cut) Reset Voltage	24V Unit = 26.0V / 48V Unit = 52.0V

Factory Defualts Continued

Parameter Description	**Factory Default Setting**
High Input Voltage Alarm 1	Disabled
High Input Voltage Alarm 1 Set Voltage	24V Unit = 30.0V / 48V Unit = 60.0V
High Input Voltage Alarm 1 Reset Voltage	24V Unit = 29.0V / 48V Unit = 58.0V
High Input Voltage Alarm 1 Activation Delay	10 seconds
High Input Voltage Alarm 1 Load Cut	Disabled
Low Input Voltage Alarm 1	Disabled
Low Input Voltage Alarm 1 Set Voltage	24V Unit = 22.2V / 48V Unit = 44.4V
Low Input Voltage Alarm 1 Reset Voltage	24V Unit = 24.0V / 48V Unit = 48.0V
Low Input Voltage Alarm 1 Activation Delay	10 seconds
Low Input Voltage Alarm 1 Load Cut	Disabled
High Output Voltage Alarm 1	Disabled
High Output Voltage Alarm 1 Set Voltage	24V Unit = 30.0V / 48V Unit = 60.0V
High Output Voltage Alarm 1 Reset Voltage	24V Unit = 29.0V / 48V Unit = 58.0V
High Output Voltage Alarm 1 Activation Delay	10 seconds
High Output Voltage Alarm 1 Load Cut	Disabled
Low Output Voltage Alarm 1	Enabled
Low Output Voltage Alarm 1 Set Voltage	24V Unit = 22.2V / 48V Unit = 44.4V
Low Output Voltage Alarm 1 Reset Voltage	24V Unit = 24.0V / 48V Unit = 48.0V
Low Output Voltage Alarm 1 Activation Delay	10 seconds
Low Output Voltage Alarm 1 Load Cut	Enabled
Load Cut Reset	Automatic
Load Cut Reset Automatic Delay	30 seconds
Auxiliary Input	Not Used
Relay 1 Function Alarm	Load Cut Alarm
Display Power Down	Disabled

5. Software

5.1. Software History

Software Version Date Released	Product Manual Date Issued	Comments
801 685 Ver 1.0 30 April 2010	Issue 4 5 Aug 2010	First issue of Software for PIC18F4620 Microcontroller New Menu System with additional Alarm Menus Note: Software bug found in October 2014 (see Ver 1.1)
801 685 Ver 1.1 30 Oct 2015	Issue 5 9 Feb 2015	Software bug in Software 801685 Version 1.0: If Regulation Mode 2 is selected (Menu 6 Screen 7), then the Load Cut Contactor (CTR5) only responds to the Input Voltage Set and Reset Voltages (set by Menu 1 Screens 9 & 10). It does not respond to any alarm even if the Load Cut is Enabled (Menu 2-5 Screen 5) Software 801685 Version 1.1 fixes this bug.
801 685 Ver 1.1 30 Oct 2015	Issue 6 10 Feb 2015	Product Manual updated to include section 4.5 Factory Defaults

5.2. Installation / Replacement of the Micro-controller

Ensure that anti-static precautions are taken to avoid damage to the Micro-controller when handling (i.e. touch a conductor that is connected to earth before carrying out the following):

Turn off all power to the Controller.

Remove the Control PCB Fascia Cover using the four plastic thumbscrews. Identify the Microcontroller IC2 (40 pin integrated circuit) on the PCB Assembly. Carefully lever out any Microcontroller presently located there by using a small flat screwdriver on both ends equally. Do this carefully.

Identify the device to be installed. Carefully handle the device without touching the legs of the device. NOTE the orientation of the semi-circular notch out of one end of the device. NOTE which end of IC2 has a notch in the PCB socket. Now insert the Microcontroller into the IC2 socket so that the notch in the device is at the same end as the notch in the socket. Before pressing down on the device to mate it fully in its socket, check that all pins are properly lined up with the pins in the PCB socket. Press the device fully into the socket and check that no leg has been bent or missed its socket.

Replace the Control PCB Fascia Cover using the four plastic thumbscrews. Restore power to the Controller.

6. Installation

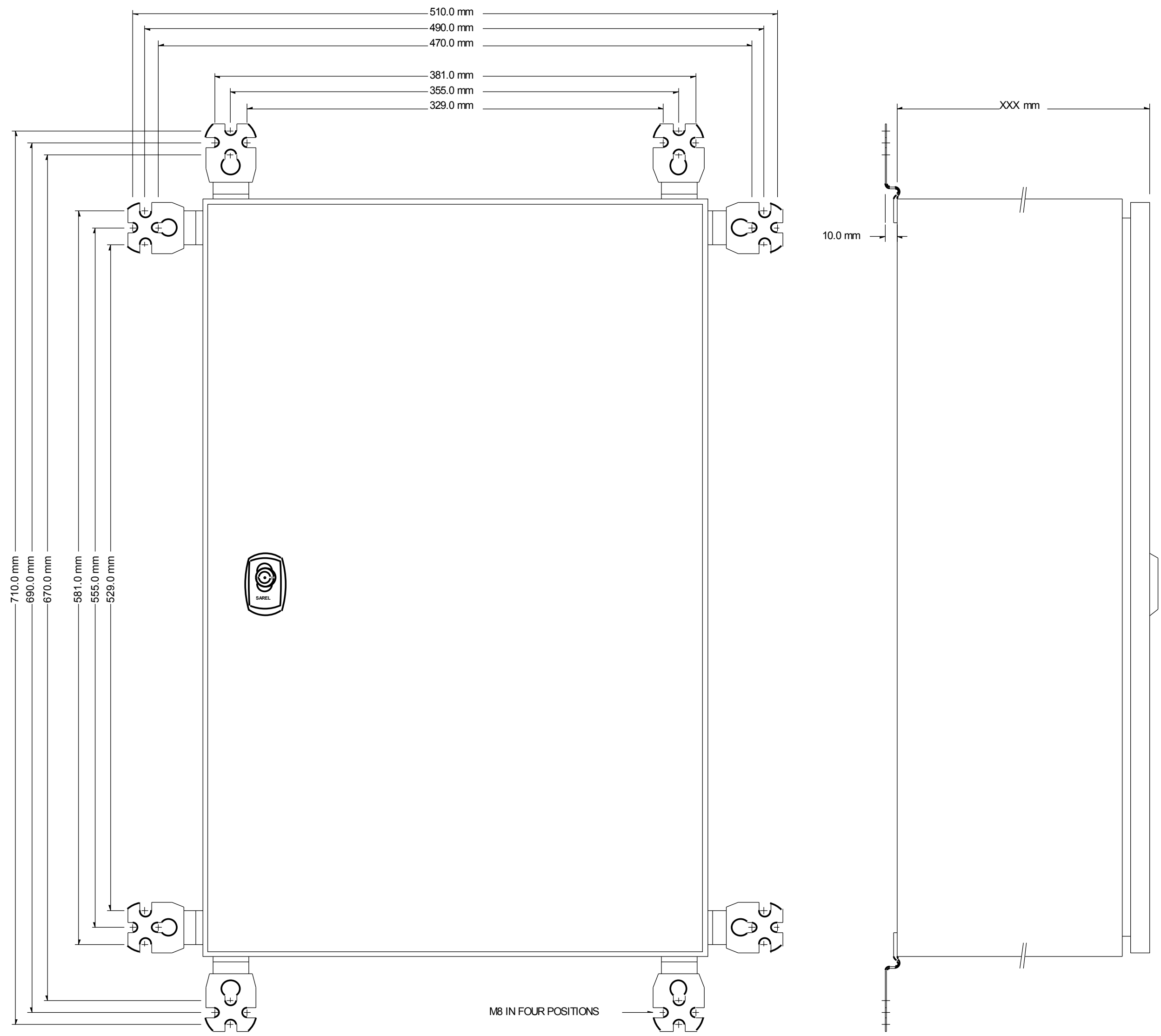
6.1. Steel Enclosure Unit Mounting

6.1.1. The OVL is supplied in a painted steel enclosures and should be installed using the four mounting feet horizontally or vertically as shown in the diagram below.

6.1.2. Ensure that the surface to which the unit will be attached is flat.

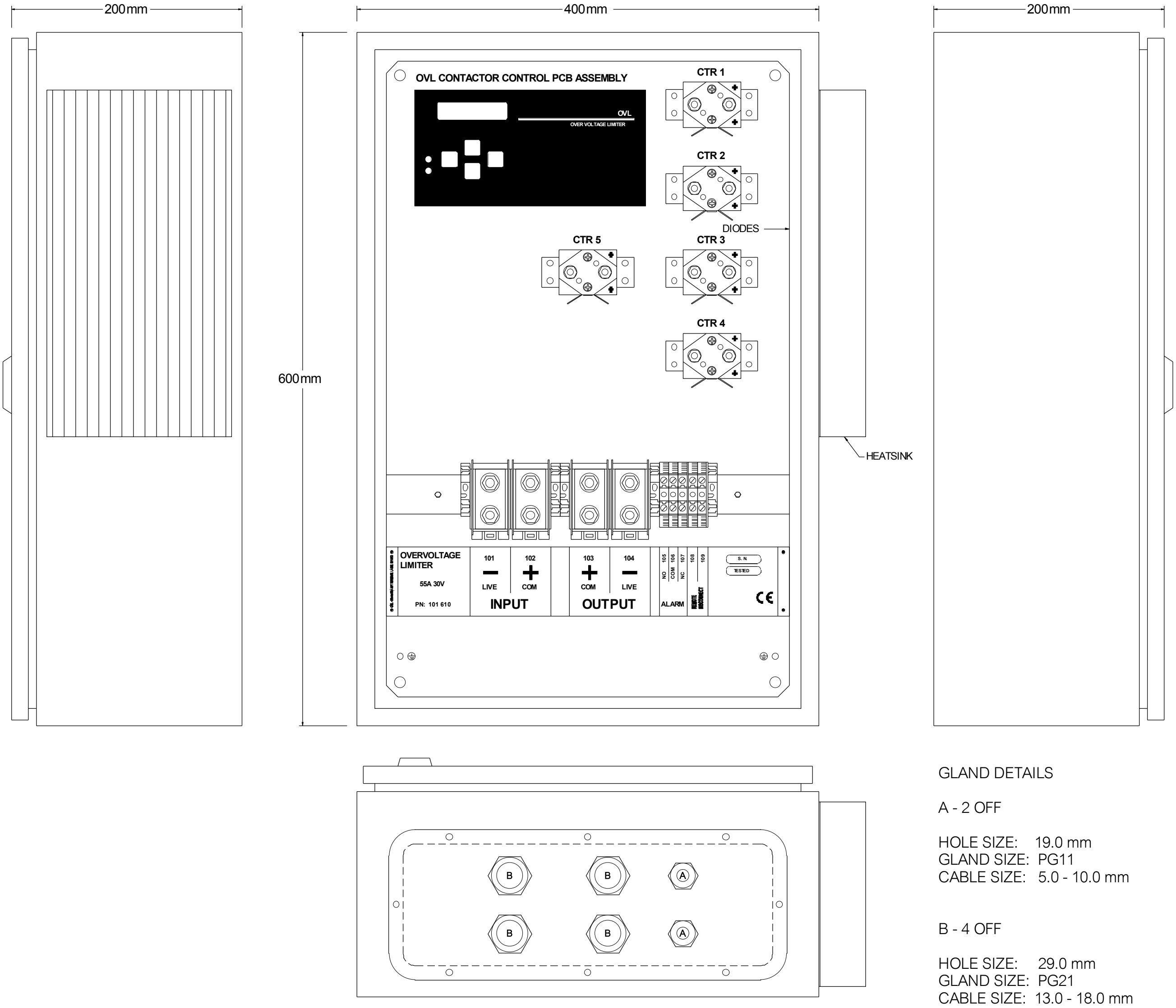
6.1.3. Ensure that the fixing method employed is sturdy enough to support the weight of the Unit.

6.1.4. Position the unit so that it is shaded from direct sunlight, sheltered from extreme weather conditions and oriented so that the cable glands are pointing downwards.

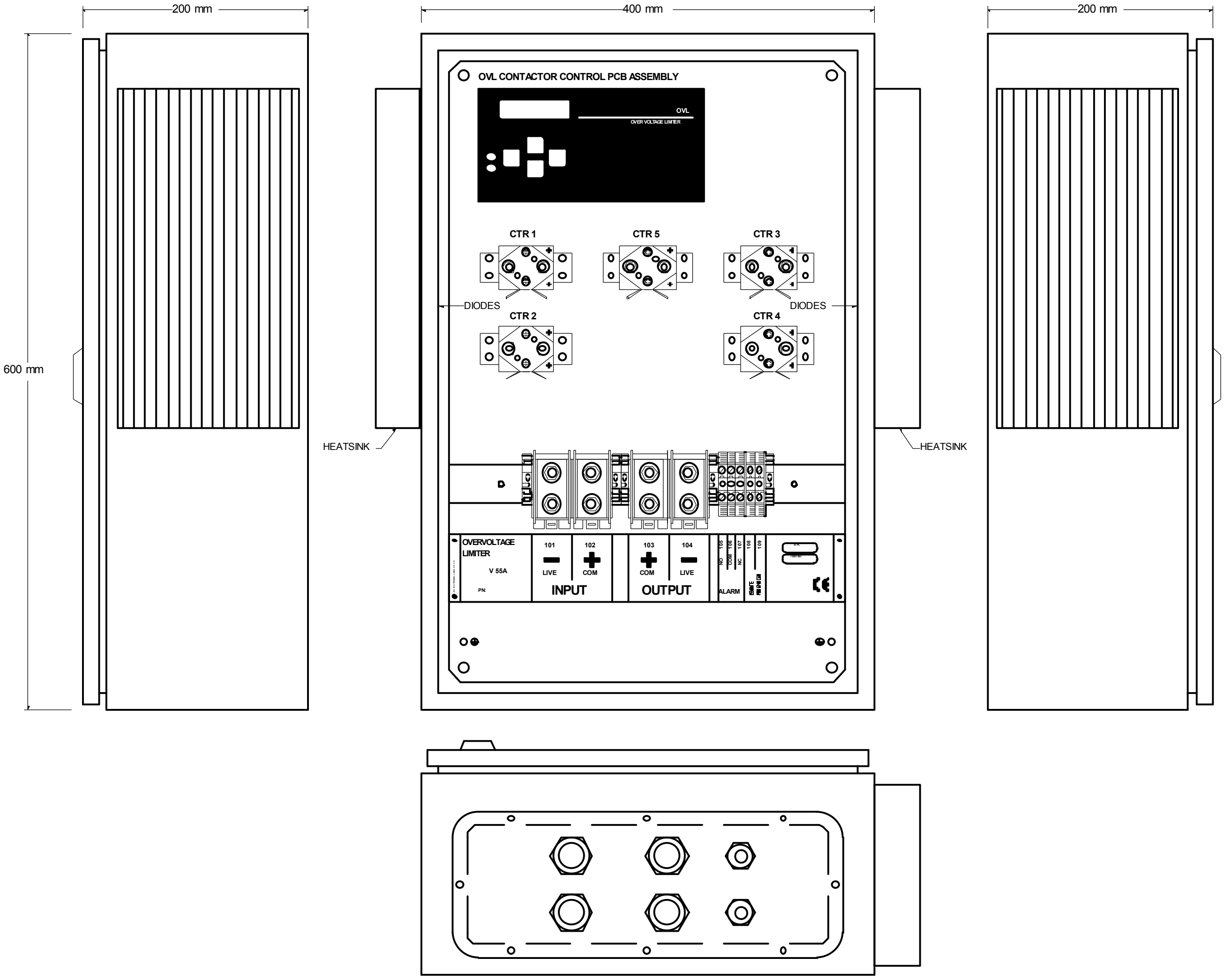


7. General Arrangements

7.1. 24V OVL Controller General Arrangement

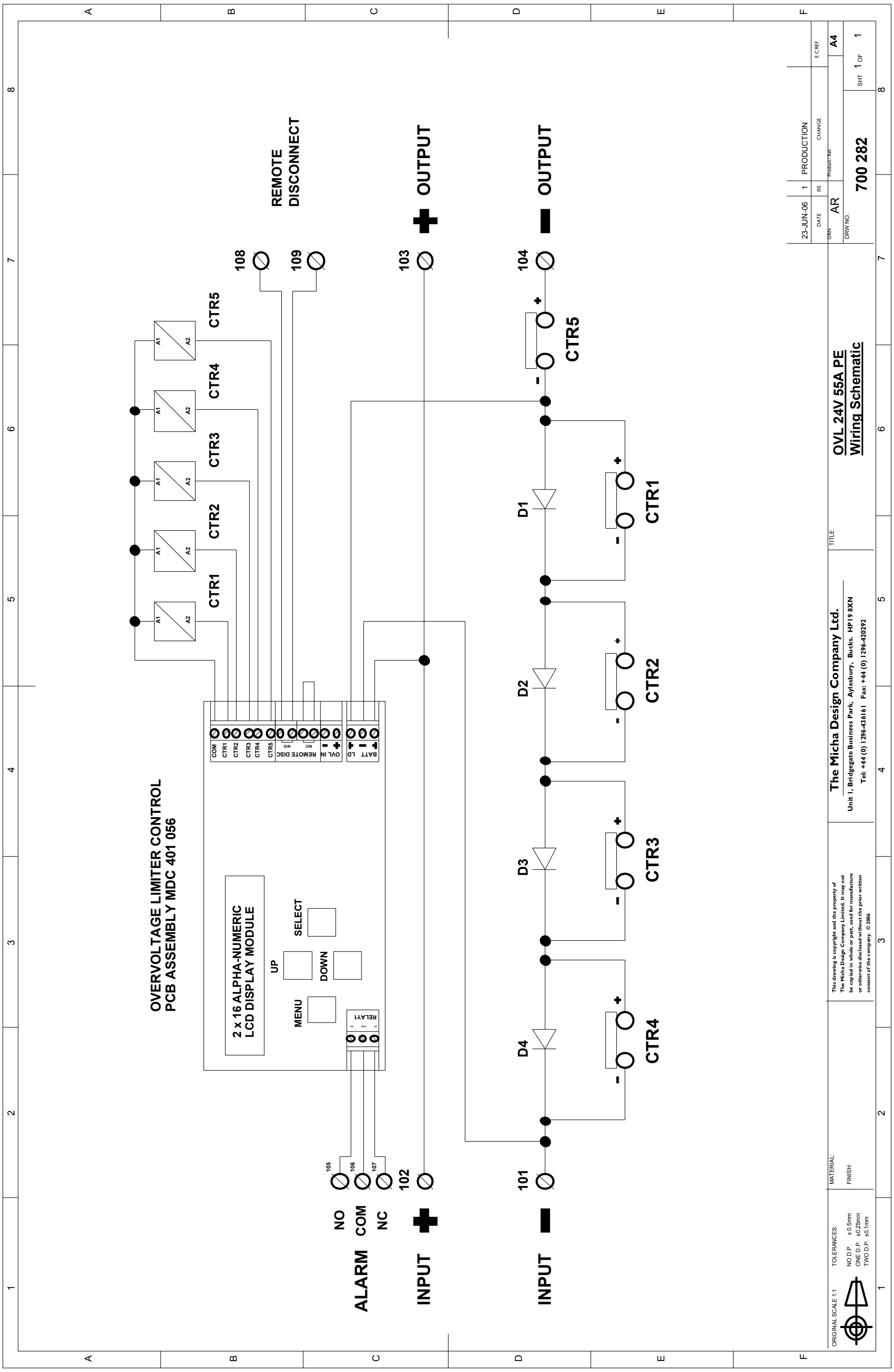


7.2. 48V OVL Controller General Arrangement

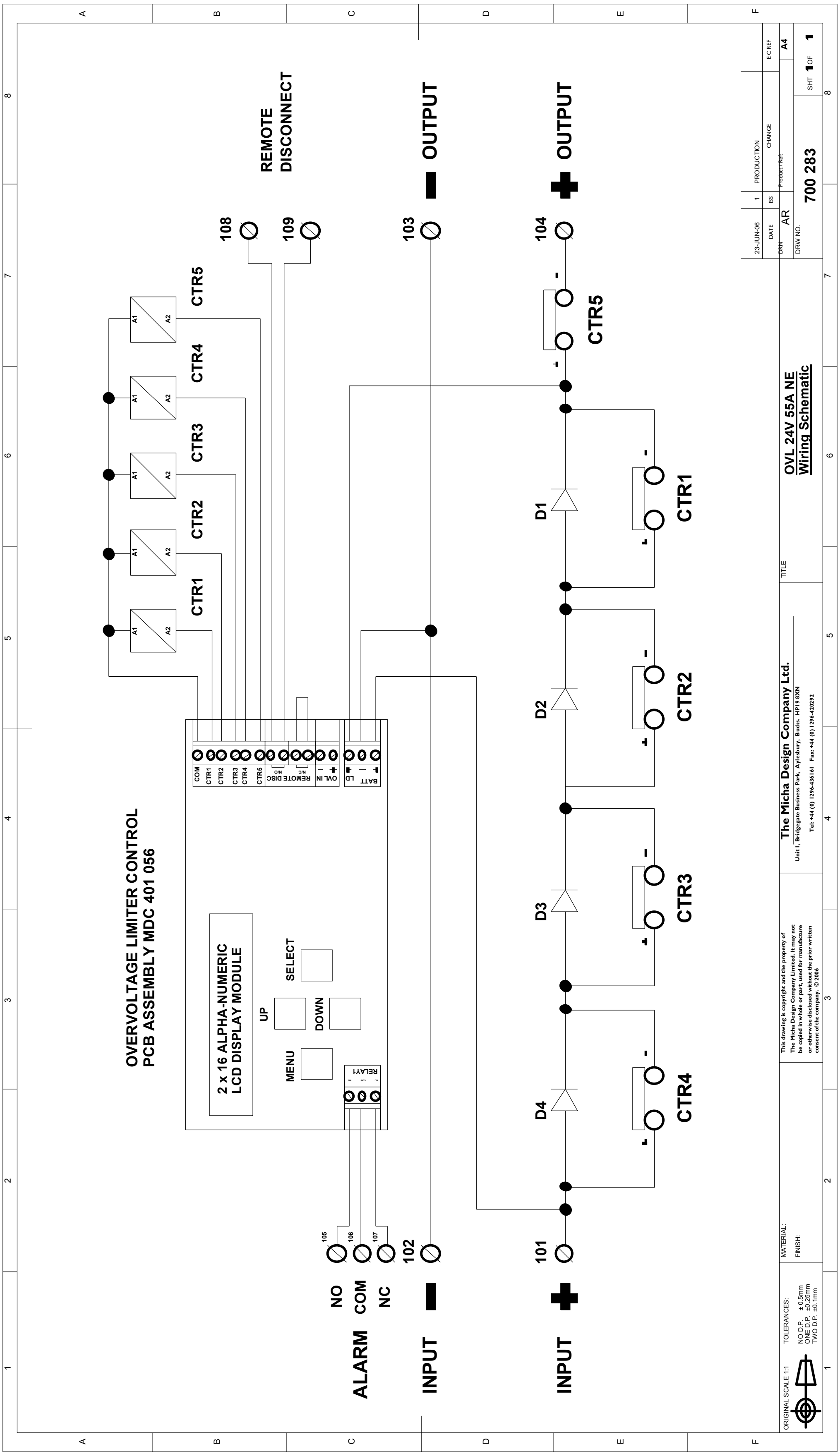


8. Wiring Schematics

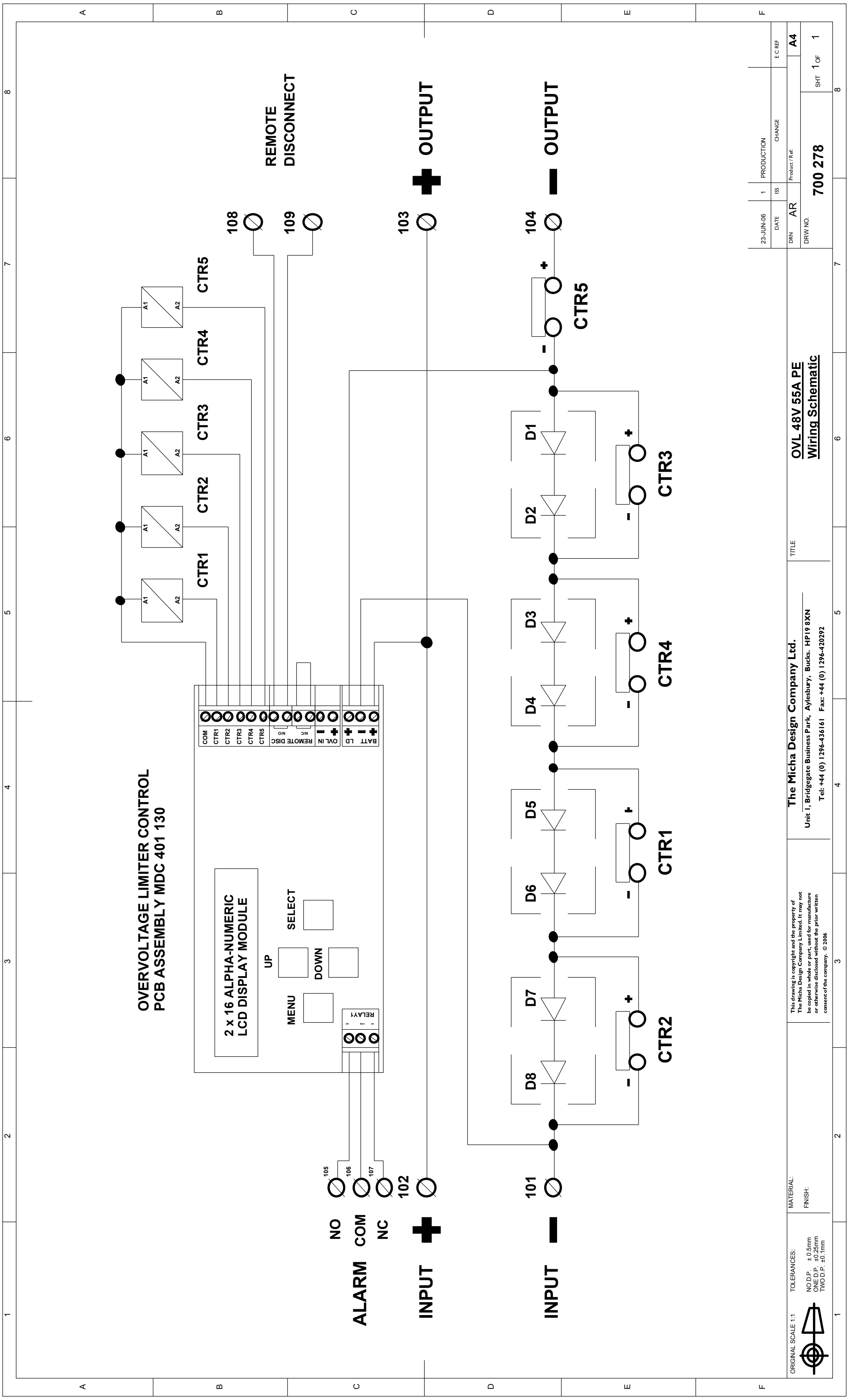
8.1. OVL 24V 55A PE (Positive Earth / Common Positive) Wiring Schematic



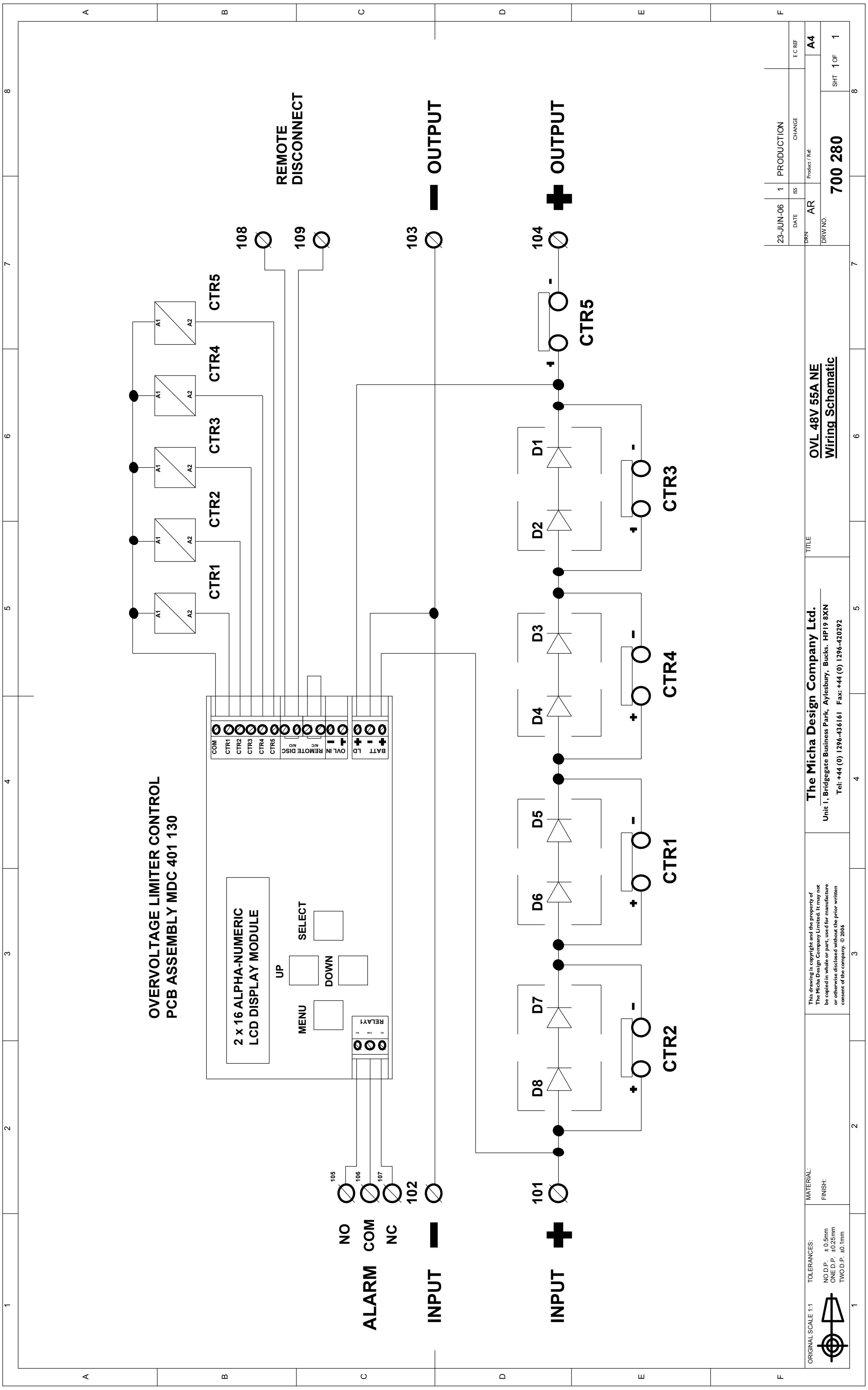
8.2. OVL 24V 55A NE (Negative Earth / Common Negative) Wiring Schematic



8.3. OVL 48V 55A PE (Positive Earth / Common Positive) Wiring Schematic

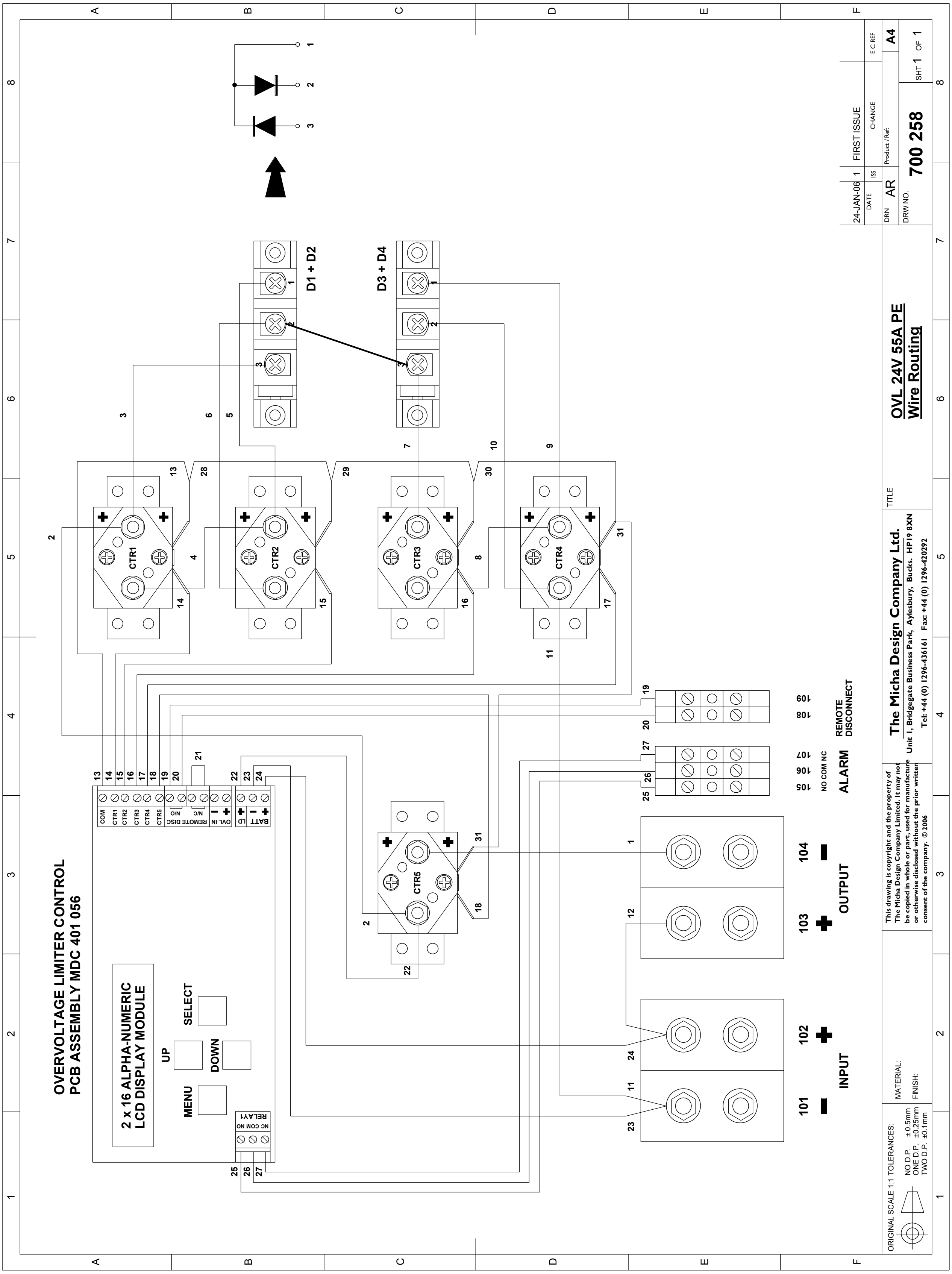


8.4. OVL 48V 55A NE (Negative Earth / Common Negative) Wiring Schematic

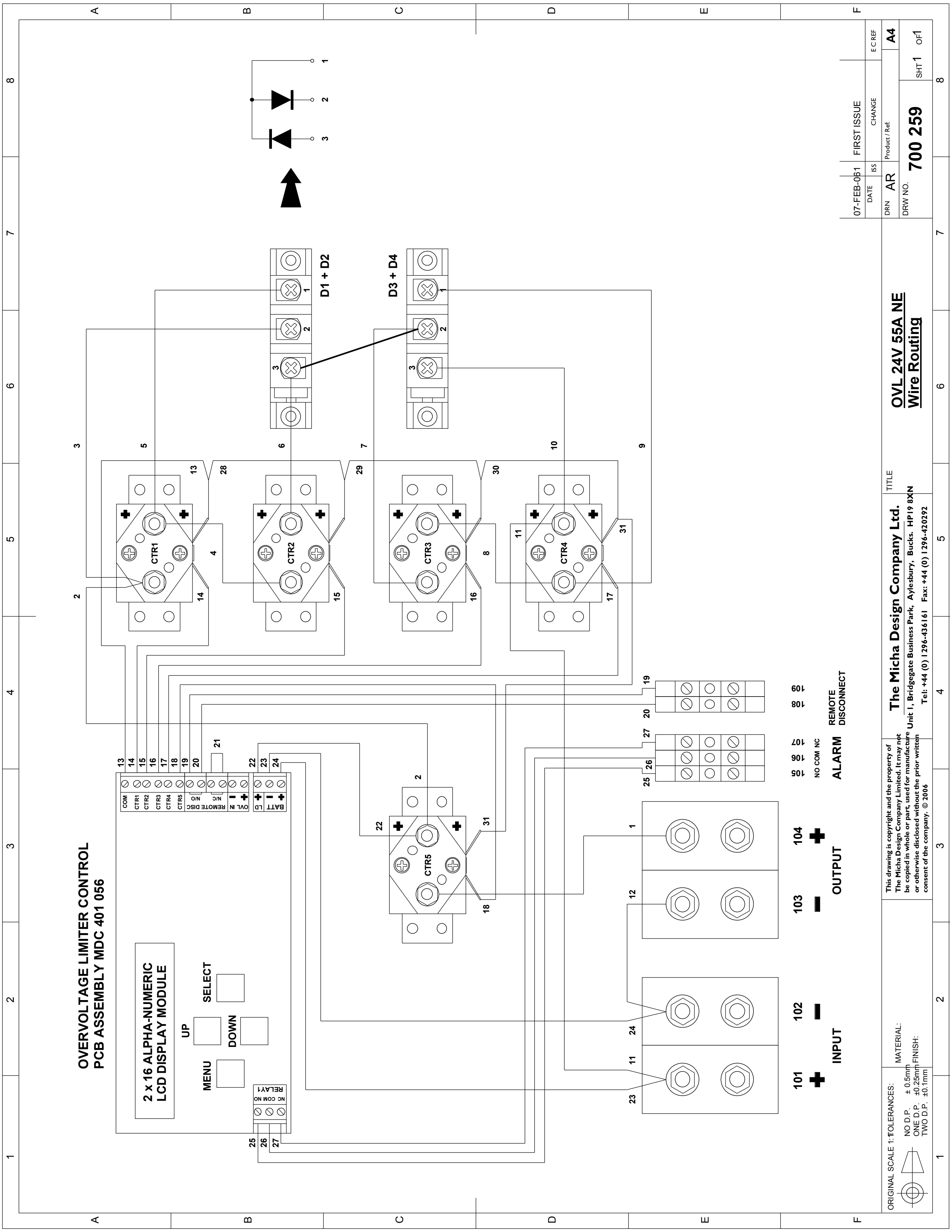


9. Wire Routing

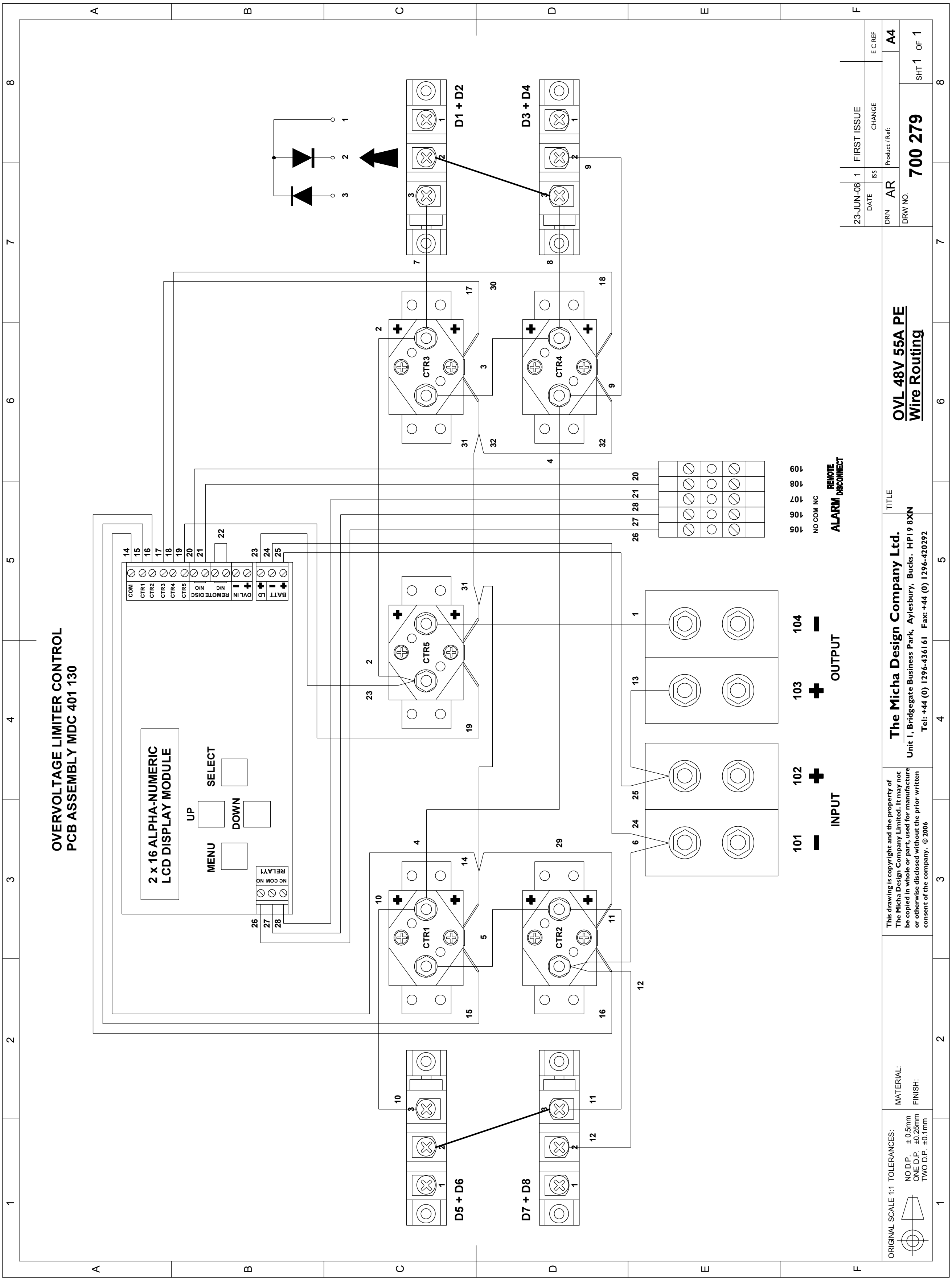
9.1. OVL 24V 55A PE (Positive Earth / Common Positive) Wire Routing



9.2. OVL 24V 55A NE (Negative Earth / Common Negative) Wire Routing



9.3. OVL 48V 55A PE (Positive Earth / Common Positive) Wire Routing



9.4. OVL 48V 55A NE (Negative Earth / Common Negative) Wire Routing

